5719

HIGH-MU TRIODE

SUBMINIATURE TYPE

Intended for applications where dependable performance under shock and vibration is paramount.

PREMIUM TYPE 5719

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage	6.3 ± 5%	. . . ac or dc volts
Current	0.150	. . . . amp

Direct Interelectrode Capacitances:

	With External Shield°	*Without External Shield*	
Grid to Plate	0.8	0.8	μμf
Input	1.9	1.7	μμf
Output	2.2	0.6	μμf

° Having inside diameter of 0.405" and connected to cathode.

Characteristics, Class A_1 Amplifier:

Plate Supply Voltage . .	100	150	volts
Cathode Resistor	1500	680	ohms
Amplification Factor . .	70	70	
Plate Resistance	41000	30500	ohms
Transconductance	1700	2300	μmhos
Plate Current	0.73	1.85	ma
Grid volts (Approx.) for plate current of 10 μamp	−2.5	−3.8	volts

Mechanical:

Operating Position . . . . Any

Maximum Bulb Length . . . . 1-3/8"

Length from Button Seal to Bulb Top (Excluding tip). . . . . 1.075" ± 0.060"

Diameter . . . . 0.383" ± 0.017"

Bulb T-3

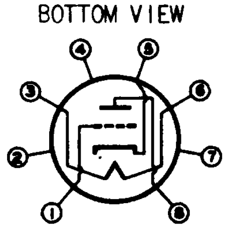
Leads, Flexible 8

Length . . . . 1-1/2" to 1-3/4"

Orientation and Diameter . . . . See Dimensional Outline in GENERAL SECTION

BOTTOM VIEW

Lead No.1 - Grid
Lead No.2 - No Conn.
Lead No.3 - Heater
Lead No.4 - No Conn.



Lead No.5 - Cathode
Lead No.6 - Heater
Lead No.7 - No Conn.
Lead No.8 - Plate

AMPLIFIER - Class A_1

Maximum Ratings, ***Absolute Values:***

PLATE VOLTAGE . . . . 165 max. volts

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

5719
HIGH-MU TRIODE

GRID VOLTAGE	-55 max.	volts
PLATE CURRENT	3.3 max.	ma
PLATE DISSIPATION	0.55 max.	watt
PEAK HEATER-CATHODE VOLTAGE:		
Heater negative with respect to cathode	200 max.	volts
Heater positive with respect to cathode	200 max.	volts
BULB TEMPERATURE (At hottest point on bulb surface)	250 max.	°C

Typical Operation as Resistance-Coupled Amplifier:

See RESISTANCE-COUPLED AMPLIFIER CHART at end of tabulated data for this type

Maximum Circuit Values:

Grid-Circuit Resistance:		
For cathode-bias operation	1.2 max.	megohms
For fixed-bias operation	Not recommended	

CHARACTERISTICS RANGE VALUES FOR EQUIPMENT DESIGN*

	Note	*Min.*	*Max.*	
Heater Current	1	0.138	0.162	amp
Grid-to-Plate Capacitance	2	0.6	1.0	μμf
Input Capacitance	2	1.2	2.2	μμf
Output Capacitance	2	0.4	0.8	μμf
Amplification Factor	1,3	60	80	
Plate Current	1,3	0.5	0.9	ma
Plate Current	1,4	-	50	μamp
Transconductance	1,3	1400	2000	μmhos
Transconductance	5,3	1300	-	μmhos
Grid Current	1,6	-	±0.3	μamp
Heater-Cathode Leakage Current:				
Heater negative with respect to cathode	1,7	-	7.0	μamp
Heater positive with respect to cathode	1,7	-	7.0	μamp
Leakage Resistance:				
Between Grid and All Other Electrodes Tied Together	1,8	100	-	megohms
Between Plate and All Other Electrodes Tied Together	1,9	100	-	megohms

* Each tube is stabilized before characteristics testing by continuous operation for at least 45 hours at room temperature and with dissipation values equivalent to life test conditions.

Note 1: With 6.3 volts ac or dc on heater.

Note 2: Without external shield.

Note 3: With plate supply voltage of 100 volts, cathode resistor of 150 ohms, and cathode bypass capacitor of 1000 microfarads.

5719

HIGH-MU TRIODE

Note 4: With dc plate voltage of 100 volts, and dc grid voltage of -2.5 volts.

Note 5: With 5.7 volts ac or dc on heater.

Note 6: With plate supply voltage of 100 volts, cathode resistor of 1500 ohms, cathode bypass capacitor of 1000 microfarads and grid resistor of 0.1 megohm.

Note 7: With 100 volts dc between heater and cathode.

Note 8: With grid 100 volts negative with respect to all other electrodes tied together.

Note 9: With plate 300 volts negative with respect to all other electrodes tied together.

SPECIAL RATINGS & PERFORMANCE DATA

Shock Rating:

Impact Acceleration . . . . 450 max. g

Tubes are held rigid in three different positions in a Navy Type, High Impact (flyweight) Shock Machine and are subjected to 450 g impact acceleration.

Fatigue Rating:

Vibrational Acceleration . . . . 2.5 max. g

Tubes are rigidly mounted and subjected in each of three positions to 2.5 g vibrational acceleration at 25 cycles per second for 32 hours.

Uniform Acceleration Rating: . . . . 1000 max. g

Tubes are subjected in each of three positions to a gradually applied uniform acceleration up to 1000 g.

Low-Frequency Vibration Performance:

RMS Output Voltage . . . . 25 max. mv

Under the following conditions: A 150-volt plate voltage supply having an impedance not exceeding that of a 40 μf capacitor, plate load resistance of 10000 ohms, grid resistor of 0.1 megohm, cathode resistor of 1500 ohms, cathode bypass capacitor of 1000 μf, and vibrational acceleration of 15 g at 40 cps.

Heater-Cycling Life Performance:

Cycles of Intermittent Operation . . . . 2500 min. cycles

Under the following conditions: With heater voltage of 7.0 volts cycled 1 minute on and 4 minutes off, heater-cathode voltage of 140 volts (rms), and plate and grid voltage = 0 volts.

Average Life Performance:

The average life performance based on a 500-hour test at 175°C ambient temperature is not less than 450 hours. This life test is made on sample lot of tubes with heater voltage of 6.3 volts; plate supply voltage of 100 volts; dc heater-cathode voltage (heater positive with respect to cathode) of 200 volts; cathode resistor of 1500 ohms; and grid resistor of 1 megohm.

The 500-hour end-point limits for the 5719 with heater voltage of 6.3 volts, plate supply voltage of 100 volts, cathode resistor of 680 ohms bypassed by capacitor having a maximum reactance of 3 ohms, and dc heater-cathode voltage of 100 volts with heater either positive or negative with respect to cathode are: transconductance, 1000 micromhos minimum; heater-cathode leakage current, 20 microamperes maximum; and grid current, +0.9 microampere maximum or -0.9 microampere maximum.

5719

5719
HIGH-MU TRIODE

OPERATING CONDITIONS AS RE-

Cathode-Bias

Plate Supply Voltage	100				
Plate Load Resistor	0.1	0.1	0.27	0.27	0.47
Grid Resistor°	0.27	0.47	0.47	1.0	0.47
Cathode Resistor	2700	2700	5600	6800	10000
Signal Input Volts (rms)	0.1	0.1	0.1	0.1	0.1
Output Volts (rms)	3.7	3.9	4.1	4.2	3.95
Gain▲	37	39	41	42	39.5
Distortion	2.4	2.1	2.1	1.8	2.4
Signal Input Volts (rms)*	0.20	0.20	0.20	0.26	0.20
Output Volts (rms)	7.3	7.7	8.1	10.7	7.8
Gain▲	36.5	38.5	40.5	41.2	39
Distortion	5.0	4.5	4.3	4.9	5.0

Zero-Bias

Plate-Supply Voltage	100				
Plate Load Resistor	0.1	0.1	0.27	0.27	0.47
Grid Resistor°	0.27	0.47	0.47	1.0	0.47
Signal Input Volts (rms)	0.1	0.1	0.1	0.1	0.1
Output Volts (rms)	3.8	4.0	4.3	4.55	4.2
Gain▲	38	40	43	45.5	42
Distortion	2.2	2.0	1.9	1.6	2.1
Signal Input Volts (rms)*	0.2	0.21	0.22	0.26	0.2
Output Volts (rms)	7.25	7.9	8.95	11	7.9
Gain▲	36.2	37.6	40.6	42.4	39.5
Distortion	5.0	4.8	4.9	4.8	4.8

Note 1: Coupling capacitors should be selected to give desired frequency response. Cathode resistor should be adequately bypassed.

° Of following stage.

TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

5719

5719

HIGH-MU TRIODE

SISTANCE-COUPLED AMPLIFIER·

Operation

	200						volts
0.47	0.1	0.1	0.27	0.27	0.47	0.47	megohm
1.0	0.27	0.47	0.47	1.0	0.47	1.0	megohm
10000	1500	1800	3300	3900	5600	6800	ohms
0.1	0.1	0.1	0.1	0.1	0.1	0.1	volt
4.3	4.4	4.6	4.9	5.0	4.8	5.0	volts
43	44	46	49	50	48	50	
1.7	0.7	0.7	0.9	0.7	0.9	0.7	per cent
0.25	0.51	0.61	0.50	0.59	0.49	0.64	volt
10.7	22	27	24.2	29	23.2	31.6	volts
42.8	43.1	44.3	48.4	49.2	47.3	49.4	
4.5	3.9	5.0	4.5	4.5	5.0	5.0	per cent

Operation

	200						volts
0.47	0.1	0.1	0.27	0.27	0.47	0.47	megohm
1.0	0.27	0.47	0.47	1.0	0.47	1.0	megohm
0.1	0.1	0.1	0.1	0.1	0.1	0.1	volt
4.55	4.7	4.9	5.35	5.4	5.2	5.4	volts
45.5	47	49	53.5	54	52	54	
1.6	0.4	0.4	0.8	0.7	0.9	0.7	per cent
0.27	0.59	0.63	0.54	0.65	0.5	0.63	volt
11.3	25	27.7	25.8	31.5	23.5	30.5	volts
41.8	42.4	43.9	47.7	48.5	47	48.4	
5.0	4.9	5.0	4.9	5.0	5.0	4.8	per cent

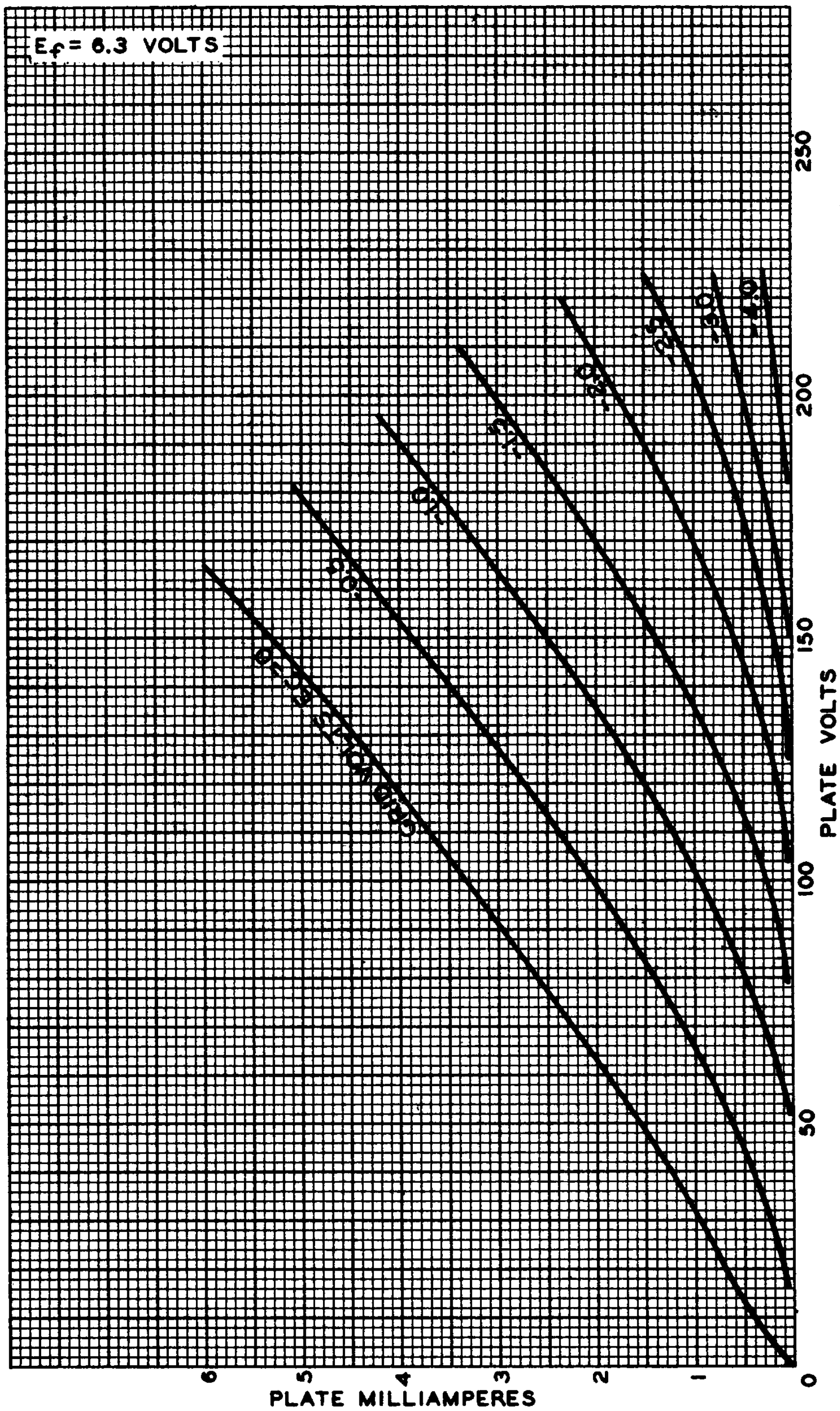
* Maximum value to swing the grid of resistance-coupled amplifier tube to the point where its grid starts to draw current.

▲ Ratio of signal output to signal input.

5719

5719

AVERAGE PLATE CHARACTERISTICS



FEB.16,1953

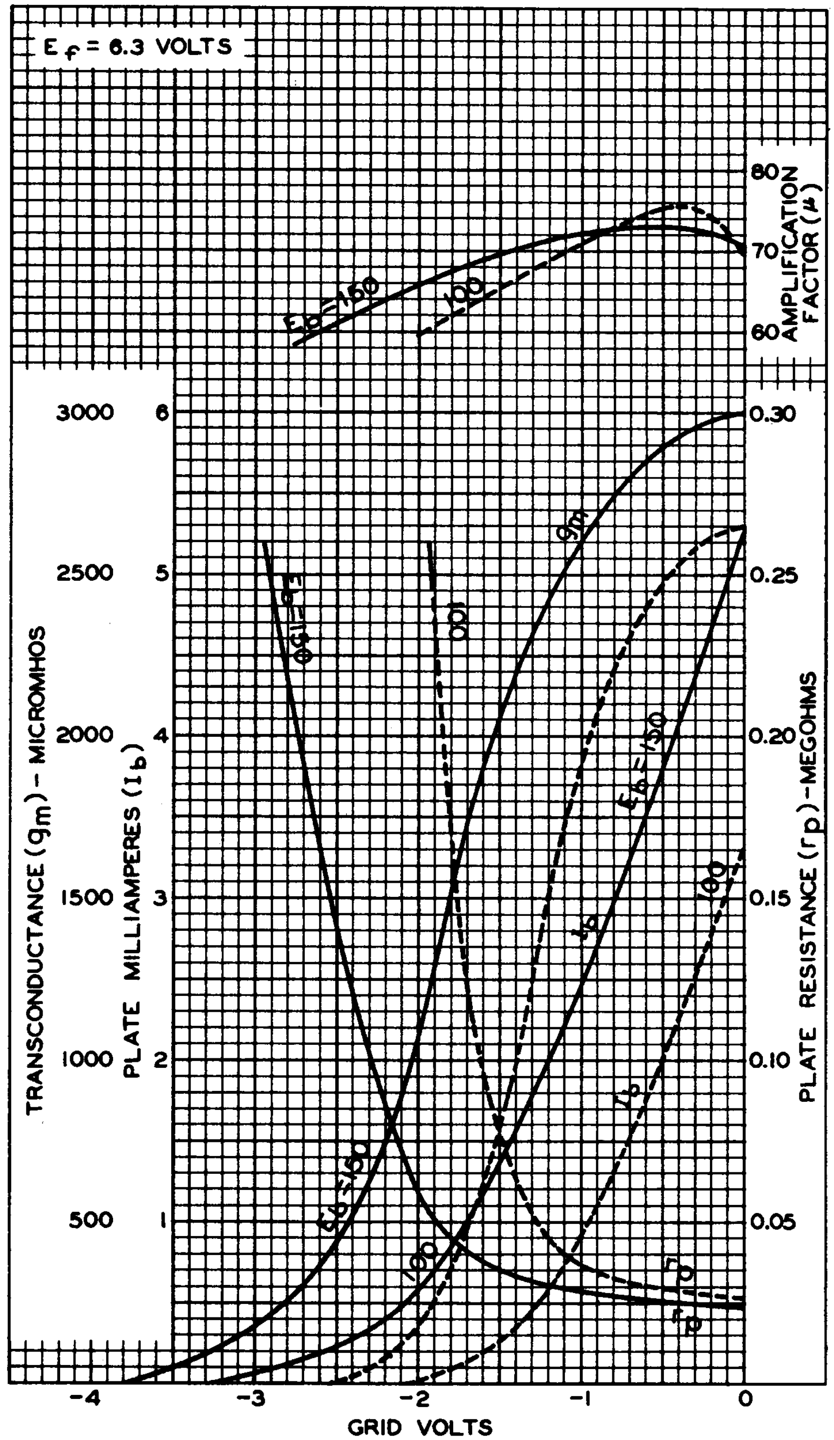
TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-7925

RCA

5719

AVERAGE CHARACTERISTICS



FEB. 16, 1953

TUBE DEPARTMENT

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-7926